Amendments to the Claims

Please delete Claims 1-19. Please add new Claims 20-39. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

1.-19. (Cancelled)

20. (New) An optical correlator having an image production device, an image capture device and an optical device for providing a Fourier transform of image information on the image production device at the image capture device, wherein the image production device and image capture device are disposed in a common plane.

21. (New) The optical correlator of Claim 20, wherein the image production device and the image capture device are integrated on a common substrate.

22. (New) The optical correlator according to Claim 20, wherein the image production device has plural image production elements, the image capture device has plural image capture elements and the image capture elements are interspersed with the image production elements.

23. (New) The optical correlator of Claim 20, wherein the image production device has plural image production elements, the image capture device has plural image capture elements and each image production element includes an image capture element.

24. (New) The optical correlator of Claim 20, wherein the image production device and the image capture device are spatially separate.

25. (New) The optical correlator of Claim 20, wherein the optical device comprises at least one positive power optical device arranged to receive light from the image production device and to pass light back to the image capture device.

26. (New) The optical correlator of Claim 25, wherein the positive power optical device comprises a curved mirror.

27. (New) The optical correlator of Claim 25, wherein the positive power optical device comprises a planar mirror and a positive power lens.

28. (New) The optical correlator of Claim 20, having circuitry for applying reference image data to one part of the image production device, and circuitry for providing reference scene data to another distinct part of the image production device.

29. (New) The optical correlator of Claim 20, wherein the image production device is operable to provide phase modulation of incident light according to applied image data.

30. (New) The optical correlator of Claim 20, wherein the image production device has two output levels only.

31. (New) The optical correlator of Claim 20, wherein the image production device comprises a ferroelectric liquid crystal on silicon spatial light modulator.

32. (New) The optical correlator of Claim 20, wherein the image production device comprises one from the group comprising a nematic liquid crystal on silicon spatial light modulator, a pi-cell spatial light modulator and a microelectromechanical systems (MEMS) spatial light modulator.

33. (New) A pixellated image capture device for a joint transform correlator, the capture device being constructed and arranged to provide an electrical signal per pixel representative of the quantity of light received at the pixel wherein the image capture device is integrated on a silicon substrate, and the integrated device further comprises processing circuitry constructed and arranged to compare the electrical signal of each pixel of the image capture device against a threshold, and to provide an output signal per pixel in accordance with the comparison result.

34. (New) The pixellated image capture device of Claim 33, wherein the threshold is formed from the electrical signals of at least one pixel adjoining the said pixel.

35. (New) The pixellated image capture device of Claim 33, comprising a pixellated image production device, wherein the processing circuitry is constructed and arranged to provide each output signal per pixel to a respective pixel of the image production device.

36. (New) The pixellated image capture device of Claim 35, having output circuitry for reading out unprocessed information from each pixel of the image capture device.

37. (New) The pixellated image capture device of Claim 36, wherein the pixellated image production device is integrated on the same substrate as the image capture device.

38. (New) A method of correlating at least one input image with at least one reference image, the method comprising:

illuminating a representation of the or each input image and the or each reference image with coherent light to provide a first light beam; and,

passing the first light beam to an optical device disposed to provide a second image at a plane, the second image being a Fourier transform of the or each input image and reference images,

wherein the second image is formed co-planar with the representation of the or each input image and reference image.

39. (New) An integrated circuit comprising a liquid crystal on silicon spatial light modulator and an image capture device, the spatial light modulator having an array of light modulating elements and the image capture device having an array of light capture elements, wherein each light capture element is arranged to provide an output representative of the light picked up by the respective capture element, the integrated circuit further having processing circuitry for each capture element constructed and arranged to process the output of the said capture element together with the output of at least a respective one other capture element and to provide a first output from each capture element in response to such processing, the capture array further having output circuitry for outputting the unprocessed output of each capture element.